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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,030	02/27/2002	Alan E. Hill	30822-PCT-CIP	1851

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EXAMINER
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MONBLEAU, DAVIENNE N

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 01/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/086,030

Applicant(s)

HILL, ALAN

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 September 2003 and 14 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 10-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

The amendment filed on 9/12/03 has been entered. Claims 1, 8, and 9 have been amended. Claims 10-14 have been withdrawn. Claims 1-14 are pending.

The amendment filed on 10/14/03 has been entered. Claims 1, 3, 4, 8, and 9 have been amended. Claims 1-14 are pending.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Partlo et al. (U.S. Patent No. 6,452,199). Partlo et al. disclose in Figure 1 a generator comprising a power supply and a pulse circuit (10), an excited atomic state generating region (2), a heat exchanger (20) and an electrical excitation generator (8), wherein said pulse circuit discharges a pulse to a gas in said region (2) and generates an excited atomic state of at least one species of molecule in the gas and prevents the gas from heating above 200-degrees Celsius.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Partlo et al. (U.S. Patent No. 6,452,199) in view of Shang et al. (U.S. Patent No. 5,892,328). Regarding Claim 2, Partlo et al. do not teach the listed items. Shang et al. teach in Figure 1 and in column 3 lines 29-49 a generator comprising a plasma tube (12) surrounding by a microwave cavity (18). It would have been obvious to one of ordinary skill in the art to use a microwave cavity in Partlo et al., as taught by Shang et al., to create an output beam in the microwave wavelength region for use in particular applications such as cleaning, etching, and photo resist stripping. (See Shang et al. column 1 lines 11-25).

Regarding Claim 3, Partlo et al. teach in column 1 applying an electric current (through pulses) to the plasma, which creates an electric field. Providing and maintaining a particular level of ionization and electric field is dependent upon the power source and the pulse power system. It would have been obvious to one of ordinary skill at the time of the invention to maintain a particular electric field to provide uniformity in the strength of the output pulses.

Regarding Claims 4-6, Partlo et al. teach in column 12 lines 24-26 that a very wide range of repetition rates of pulses may be used, which directly affects the electric field of the pulses. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a particular pulse configuration to provide stability for the apparatus application.

Regarding Claim 7, Partlo et al. teach pre-ionization means in column 10 lines 40-57 and list 5 specific types of techniques. Partlo et al. further state that pre-ionization is a well-developed technique that is used in laser devices, which would then include lasing the plasma.

Regarding Claim 8, Partlo et al. teach in Figure 1 generating a plasma comprising providing a flowing gas, applying a pulse to the gas to form a plasma, continually applying pulses to sustain ionization of the plasma. It is inherent that the applied pulses energy must be above the ionization threshold level in order to create plasma. Partlo et al. do not teach an E/N value. However, it is known in the art that discharge pulses have an electric field that would be applied to the gas. It would have been obvious to one of ordinary skill in the art at the time of the invention to use control the intensity of the electric field by controlling the discharge pulses to provide uniformity in the strength of the output pulses.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Partlo et al. (US 6,452,199). Partlo et al. teach in Figure 1 generating a plasma comprising providing a flowing gas, applying a pulse to the gas to form a plasma, continually applying pulses to sustain ionization of the plasma. It is inherent that the applied pulses energy must be above the ionization threshold level in order to create plasma. Partlo et al. do not teach an E/N value. However, it is known in the art that discharge pulses have an electric field, which is then applied to the gas. It would have been obvious to one of ordinary skill in the art at the time of the invention to use control the intensity of the electric field by controlling the discharge pulses to provide uniformity in the strength of the output pulses.

### ***Response to Arguments***

Applicant's arguments filed 9/12/03 have been fully considered but they are not persuasive.

The Applicant argues that Partlo et al. do not disclose an integral electrical excitation generator and heat exchanger. According to Webster, the word *integral* means "formed as a unit

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with another part". Thus, if you view the entire system/generator as a unit, the electrical excitation generator (8) and heat exchanger (2) are integral parts of that unit.

The Applicant argues that Partlo et al. require high temperatures. However, the purpose of the heat exchanger is to control overheating of the system. And Partlo et al. further teach in columns 12 lines 1-15 that another embodiment may include keeping the working temperature at room temperature, which is not considered an extremely high temperature.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it is known in the art that active laser materials result in specific output wavelengths based on their individual characteristics. Therefore, implementing a microwave cavity into a plasma generator in Partlo et al., as taught by the plasma generator in Shang et al., would create an output beam in the microwave wavelength range which would have particular applications such as cleaning, etching, and photo resists stripping. (See Shang et al. column 1 lines 11-25).

The Applicant argues that the cited prior art does not teach "the simultaneous application of a high intensity pulsed field to induce ionization and a lower intensity electric field to optimize the production of the desired excited state(s) of a target molecule". However, Claims 8 and 9 do not recite this limitation, but rather applying a first pulse to the gas to form a plasma, and applying additional pulses to sustain quasi-continuous ionization. Partlo et al. teach in

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Figure 1 applying an electric pulse, which is required for initial ionization, and continually applying additional pulses to sustain the ionization. Partlo et al. further disclose in column 10 lines 40-58 that pre-ionization techniques are known in the art in laser systems, where part of the plasma, which is pre-ionized, is subsequently lased.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. (Note: as of January 20, 2004, the examiner's telephone number will be 571-272-1945). The examiner can normally be reached on Mon-Fri 9:00 am to 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 703-308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Darienne Marbleau*

DNM

  
**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
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